In the claims:

1. (currently amended) An N-channel optical repeater comprising:

an amplifier for amplifying an input signal tuned to at least one of the N channels, wherein the wavelengths of N channels forwarded by the optical repeater are selected responsive to a gain behavior of the amplifier at the wavelengths of the N channels.

2. (original) The N-channel optical repeater of claim 1, wherein the amplifier is an Ebrium Doped Fiber Amplifier (EDFA).

3. (withdrawn) The N-channel optical repeater of claim 1, wherein the amplifier is a Linear Optical Amplifier (LOA).

4. (withdrawn) The N-channel optical repeater of claim 1, wherein the amplifier is a silicon optical amplifier (SOA).

5. (original) The N-channel optical repeater of claim 1, wherein the N channels comprise wavelengths allocated to at least one communication band.

6. (original) The N-channel optical repeater of claim 5, wherein frequencies of the N-channels are spaced at 100Ghz intervals.

7. (original) The N-channel optical repeater of claim 5, wherein the frequencies of the N-channels are spaced at 50 Ghz intervals.

8. (original) The N-channel optical repeater of claim 5, wherein the communication band is C-band.

9. (original) The N-channel optical repeater of claim 5, wherein the communication band is L-band.

10. (original) The N-channel optical repeater of claim 5 wherein the at least one communication band comprises C-band and L-band.

11. (withdrawn) A method of assigning wavelengths to channels for communication on an optical network including the steps of:

identifying, responsive to a gain behavior characteristic of a component used in the optical network, wavelengths having desirable gain characteristics;

mapping channels for communication of optical signals only to wavelengths at which the component has desirable gain characteristics; ; and

forwarding optical signals between end points on the mapped channels.

12. (original) The method of claim 11, wherein the component is an amplifier.

13. (original) The method of claim 12, wherein the component is an erbium-doped fiber amplifier (EDFA).

14. (withdrawn) The method of claim 11, wherein the channels are mapped at 100 Ghz intervals.

15. (withdrawn) The method of claim 11, wherein the channels are mapped at 50 Ghz intervals.

16. (withdrawn) The method of claim 11, wherein the channels are mapped in the C-band.

17. (withdrawn) The method of claim 11, wherein the channels are mapped in the L-band.

18. (withdrawn) The method of claim 11, wherein the channels are mapped in the C and L bands.

19. (withdrawn) The method of claim 11, wherein the step of identifying uses an aggregate gain characteristic representing gain behavior of at least two components in the optical network.

20. (withdrawn) An optical transport system comprising:

a transmitter for transmitting an optical signals, the optical signal transmitted at a selected wavelength;

an optical repeater including a component having a gain behavior for a spectral range of wavelengths; and

means for selecting the selected wavelength for carrying the optical signals in response to the gain behavior of the component at the selected wavelength.

21. (withdrawn) The optical transport system of claim 20 wherein the component is an erbium-doped fiber amplifier (EDFA).

22. (withdrawn) The optical transport system of claim 20 wherein the component is a (EDFA).

23. (withdrawn) The optical transport system of claim 20, wherein the component is a Linear Optical Amplifier (LOA).

24. (withdrawn) The optical transport system of claim 20, wherein the component is a Silicon Optical Amplifier (SOA).